

2020

2020

MULTI VTM

LG AIR
SOLUTION



MULTI VTM

LG Electronics

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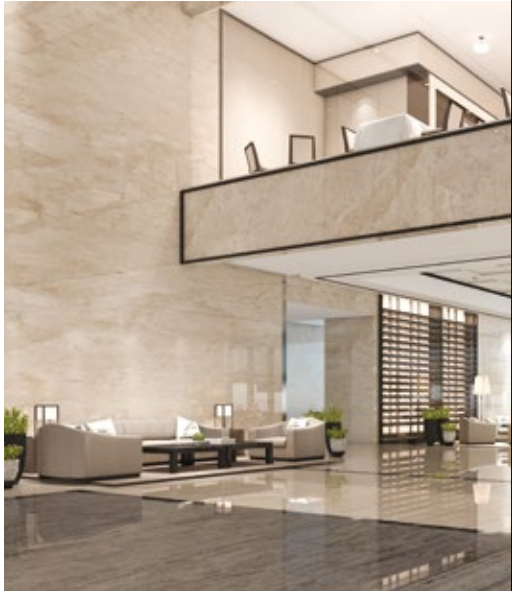
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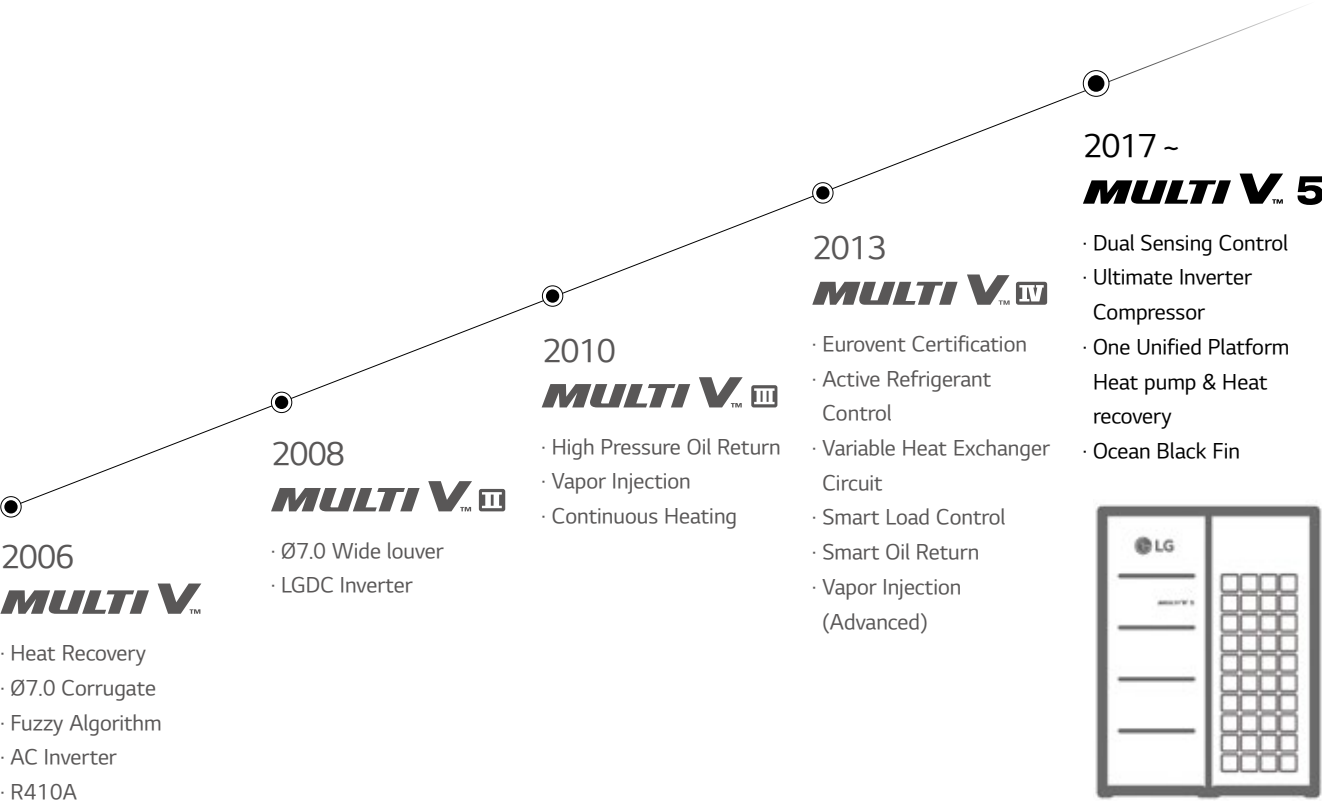
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MULTI V BRAND HISTORY



Since the time when LG launched Korea’s first residential air conditioner in 1968, the company has worked to continuously enhance its technological innovation and reliability. As a result of sustained improvement, LG VRF launched the first generation of MULTI V in 2006 and achieved significant development. With the best-in-class compressor technology and innovation applied to every part and control solution, MULTI V has evolved to be on of the world’s most efficient and reliable VRF solutions.

The first and second generations of MULTI V boasted inverter technology and non-ozone depleting technology, while MULTI V III was produced with cutting edge tech like oil return with HiPOR™ and double compression features with mid-pressure refrigerant allowed by Vapor Injection. The innovative technologies of MULTI V’s fourth generation brought about product leadership in efficiency. Its smart load control adjusts with the outdoor temperature, while optimizing refrigeration management and heat exchange for both cooling and heating.

MULTI V’s wide range of VRF solutions satisfies various building types and sizes. MULTI V S’s size discharge was designed for small to mid-sized buildings while MULTI V Water is a water-cooled VRF solution with variable water flow control technology.

In 2017, the ultimate VRF solution was introduced with MULTI V 5. This generation has fully improved its technological potential with the powerful and reliable yet economical Ultimate Inverter Compressor, effective corrosion resistance with the Ocean Black Fin coating and enlarged fans. Dual Sensing Control offers the most pleasant indoor environment while minimizing unnecessary energy loss by sensing both temperature and humidity to efficiently manage cooling, heating and part load.

MULTI V 5 has been designed for the ultimate efficiency, performance, flexibility, comfort and control, ensuring the most pleasant indoor experience.

LATIN AMERICA SALES INFRASTRUCTURE

Total HVAC Solution Provider

The LG Electronics Air Solution Business Unit is a provider of total HVAC and energy solution. The company offers a broad portfolio of air conditioner products that are compatible with any building anywhere, including compact residences, towering skyscrapers, massive factories and giant concert halls. As a true total HVAC and energy solution provider, LG also supplies even the largest buildings and industrial facilities with central air conditioning systems such as chillers and efficient control solutions.

The history of the business unit goes back to 1968, when LG (then called GoldStar) rolled out Korea’s first residential air conditioner. As the company first began making chillers for large commercial buildings in 1970, the commercial air condi-

tioning business has grown exponentially, especially within the last 20 years. In 2008, LG sold its 100 millionth air conditioning unit, becoming the first company in the industry to reach that significant milestone. The success of LG air conditioners has allowed the company to become one of the major players in the highly competitive HVAC industry. By enhancing the industry’s B2B infrastructure and finding further solutions for the HVAC sector, LG has risen to become a total HVAC solutions specialist. The company has steadily increased its sales and market share by introducing energy efficient and reliable HVAC solutions and actively pursuing new opportunities wherever they arise. This sustained, excellent performance is built on a solid foundation of global R&D and advanced manufacturing capabilities.



ENGINEERING TOOLS & SUPPORT

From planning to service & maintenance and then to de-construction, an architectural project goes through many stages from the beginning to the end of its lifecycle. Along those stages, various engineering tools are applied to solve the diverse issues happening in each stage, with the most optimal solution possible. Given the usage of such tools, buildings are effectively designed, built, supervised, and maintained throughout their lifecycle. Dedicated to provide the best HVAC engineering support, LG Electronics Air Solution Business Unit offers several engineering tools and solutions focused on HVAC, during the overall lifecycle of a building, related to the three categories. Among them, the LATS* Program series has been developed to offer the best tool for LG HVAC systems, providing our customers with a solution that allows for faster, easier and more accurate model selection, draft energy estimations and more.

* LATS : LG Air-conditioner Technical Solution



I

Energy Estimation
& Energy Modeling



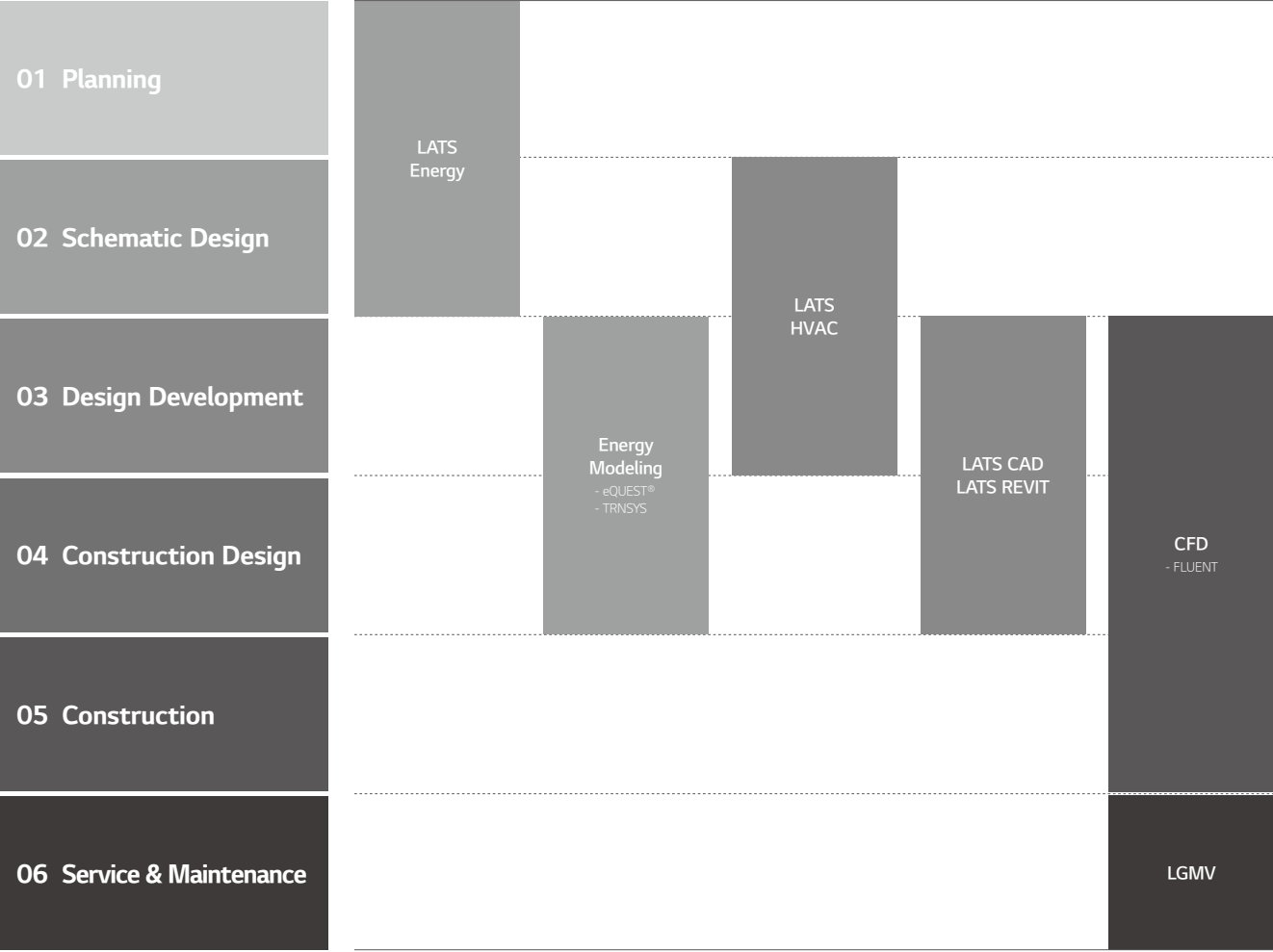
II

Model Selection
& Design



III

Installation
Environment
Simulation



01 Draft Energy Estimation

LATS Energy

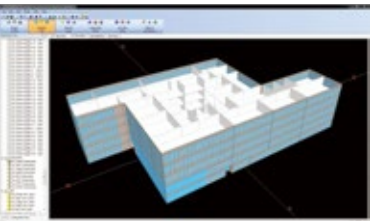
LATS Energy is a program developed by LG to estimate energy consumption and analyze the life cycle cost of LG commercial air conditioning systems during a project's early stages.



02 Building Energy Modeling

eQuest, EnergyPro, Trace700 and More

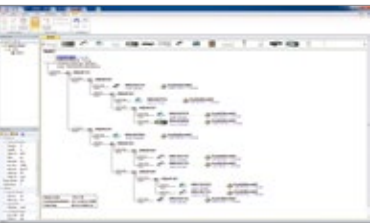
These are certified commercial programs which assess the HVAC system efficiency and building's annual energy savings for building standards or certifications, like LEED. LG HQ supports these programs for the project stages of Design Development and Construction Design wherein the overall designing is finished.



03 Model Selection

LATS HVAC

LATS HVAC is a model selection program that accurately and quickly selects the most suitable LG commercial air conditioning systems for each design. In addition to model selection, faster estimation on refrigerant piping diameter and additional refrigerant is possible, along with auto printing of reports.



04 Design

LATS CAD

LATS CAD enables faster and more accurate 2D design of LG commercial air conditioning systems. It also enables modules for quotation and installation review that minimize inherent problems during installation and commissioning.

※ AutoCAD program is required.

LATS REVIT

LATS REVIT allows BIM users to have an attractive 3D design of LG commercial air conditioning systems with embedded calculations for refrigerant and efficiency features.

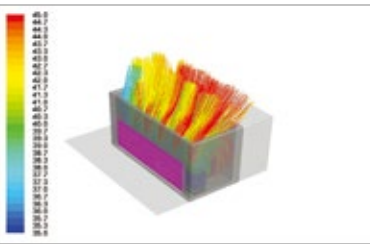
※ AutoCAD Revit program is required.



05 Environment Simulation

CFD Analysis

CFD Analysis is applied in areas of estimating : indoor airflow and temperature distribution while operating VRF products, outdoor airflow distribution, and noise level. By running a simulation before construction, engineers estimate possible issues and find optimal solutions for malfunctions that could occur after construction.



06 Service & Maintenance

LGMV

LGMV offers real-time MULTI V cycle monitoring. During start-up, LGMV can check for normal operation as well as troubleshoot any errors. Also it helps to find causes of errors and solve the problem faster.



BENEFITS OF LG MULTI V

Benefits for Building Owners

- **Efficient Management & Cost Reduction**
 - Fault Detection Diagnosis enables easy maintenance
 - Requires no extra manpower for regular maintenance
 - With diverse control systems, maintenance cost is minimized
- **Reliability at Every Stage**
 - Ultimate Inverter Compressor developed and manufactured in Korea
 - Corrosion resistant Ocean Black Fin for harsh conditions operation
 - Smart Oil management (Auto Oil Balancing and Active Oil return) decreases compressor damage
- **Customized Comfort and Solution**
 - Compatible option between Heat pump and Heat recovery system is possible



Benefits for Consultants

- **Versatile Solutions**
 - Air-cooled, Water-cooled, Heating, and Air Handling Unit interlocking solutions
- **Professional Design Support**
 - LATS (LG Air-conditioner Technical Solution) for draft energy estimation, model selection, HVAC design and 3D designing
 - CFD Analysis to ensure suitable solutions and prevent malfunctions
 - Energy simulation offered to find the optimal solution
- **Optimized Convenience with HVAC Design**
 - Flexible and longer piping length facilitates HVAC designing process
 - Meets any type of customer requirements of diverse environment, design conditions, and building applications



Benefits for Developers & Construction Companies

- **Green Solutions**
 - Optimized for LEED/BREEAM certification
 - Renewable energy solution provided through geothermal application
- **Maximizing Space Utilization**
 - Large capacity in compact size enhances space utilization
- **Smart Building Solutions**
 - Seamless integration with current Building Management Systems
 - Wi-Fi control available for anytime, anywhere access (via the 'LG ThinQ' mobile app)
 - Energy management and control according to usage and planning is possible with LG's centralized control solution



Benefits for End-users

- **Cost Saving Operation**
 - High efficiency guaranteed throughout product line-up
 - Up to 31% cost savings with MULTI V's Smart Load Control*
- **Comfort Cooling & Heating**
 - Smart Load Control maximizes indoor comfort level
 - Dual Sensing Control offers pleasant and comfortable cooling and heating environment
 - Duration time of Continuous Heating is 11% longer than previous model**
- **Convenient Functions**
 - Low-noise operation provides a pleasant environment

* Dual Smart Load Control ESEER based, below 50% humidity, model ARUM260LTE5
** LG internal test result

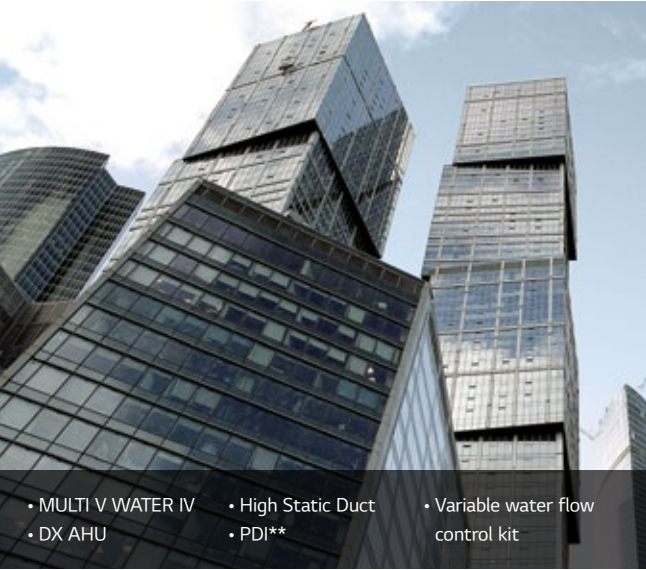


APPLICATION SOLUTIONS

Office

Supporting efficiency with flexibility

High Rise Office Building



Small to Medium sized Office Building



The MULTI V series revitalizes the workspace by providing fresh air at all times. LG's intelligent control solutions add comfort to any space.

Commercial

Maximizing business, minimizing cost

Shopping Mall



Retail



Quick Service Restaurant (QSR)



The highly efficient, energy saving MULTI V 5 and MULTI V M reduces operation costs, and provides comfort that suits any purpose and any space, helping to invest the extra space and expense to your business.

* CST : Cassette ** PDI : Power Distribution Indicator

Residential

Creating a comfortable home

Condominium & Apartments



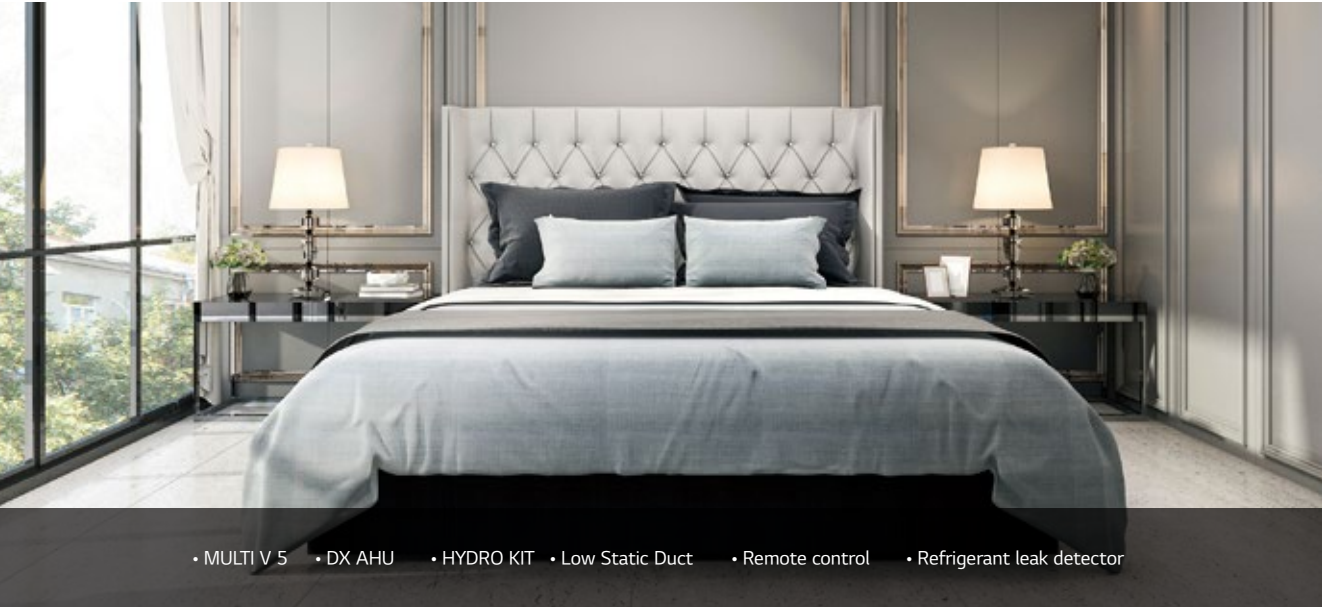
Single Family House & Villa



Remarkably compact size and high static pressure of MULTI V S enables optimal space solution, providing comfort to every space through individual zone control and hot water solution.

Hospitality

Meeting diverse needs



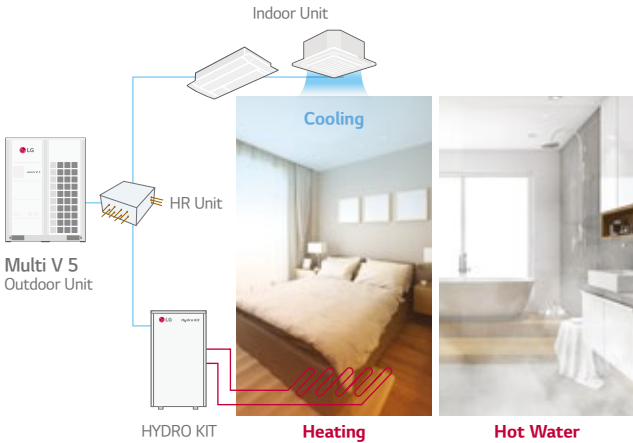
The diverse applications that can be applied to MULTI V 5 helps bring just the right solution to a sophisticated hotel business.

* ESS : Energy Storage System * PV : Photovoltaics

DIVERSE INTEGRATED SOLUTION

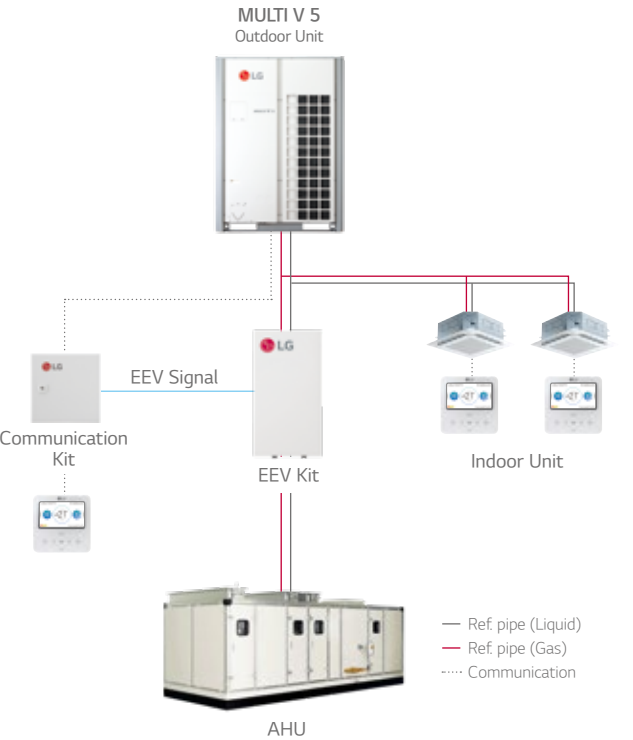
Hot Water Solution

Water heating costs can be reduced with a heat pump, which provides higher efficiency than a boiler system. The HYDRO KIT can be connected to MULTI V 5, providing temperatures up to 80C. Energy savings can be maximized with the combination of the HYDRO KIT and the MULTI V 5 Heat Recovery system.



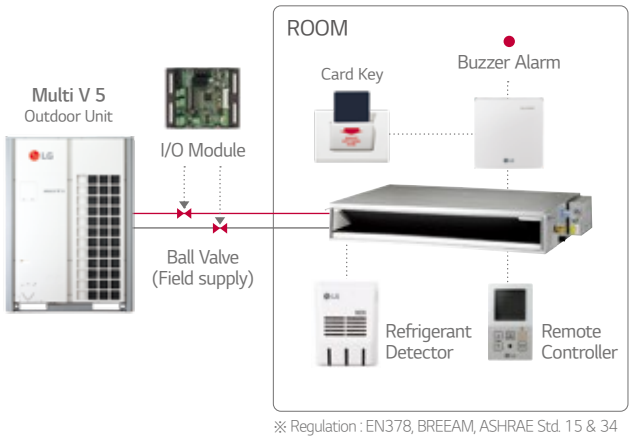
Air Handling Unit (AHU) Solution

AHU is a suitable solution for cooling and heating in large space. With an LG AHU Comm. Kit (for both return air / supply air control) connected to the DX coil of the AHU, LG VRF system can be applied to deliver conditioned air.



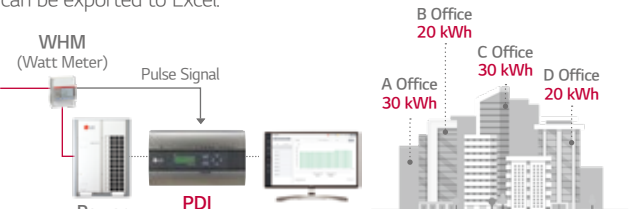
Refrigerant Leak Detection Solution

Real-time refrigerant leak detection ensures a safe environment. When refrigerant concentration exceeds 6,000ppm for 5 seconds, the indoor unit will stop operation and alert users with a buzzer or light switch (Dry contact option).



Power Consumption Distribution Solution

In case of shared power consumption in a building, a solution to distribute the power consumption amount per tenant might be necessary. Electricity charges can be billed to each tenant by using output from the LG Power Distributor Indicator (PDI). An administrator is able to check the power usage for each space and date as needed. If the PDI is used in conjunction with an LG central controller, the results can be exported to Excel.



Total Control of Any Device

In order to manage multiple spaces and multiple buildings, the administrators should be able to control systems from wherever they are. The LG central controller can be controlled from any web browser that supports HTML5. Now through the implementation of HTML5, the interface will look great and perform well on any device.



DIVERSE INTEGRATED SOLUTION

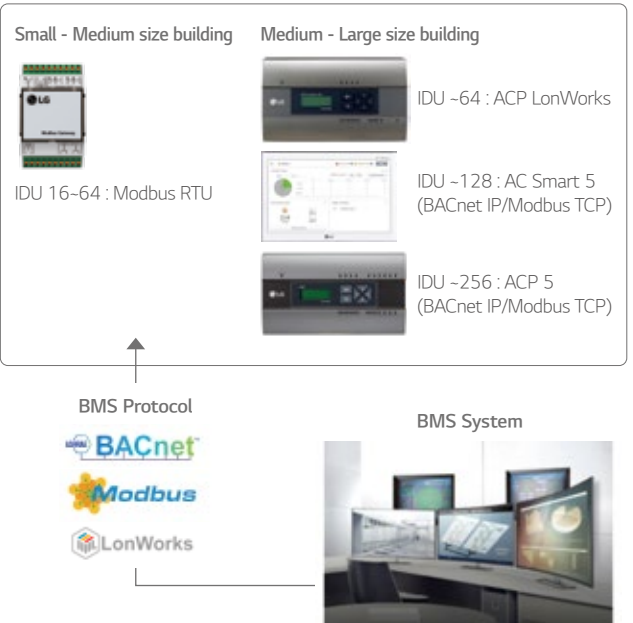
Energy Management Solution

Since HVAC systems use a significant portion of any building's total amount of energy, the energy saving functions of a controller can make a big difference. The energy navigation function enables you to set target values for energy consumption over a certain period of time. In addition, to achieve that value, the administrator can set the energy saving logic in 7 steps and predict the expected usage relative to the target value. Active self-management enables energy savings throughout the building.



Integration Solution with BMS

There are many BMS protocols used for the control of buildings' various systems such as HVAC, lighting, power and security. LG has a wide range of gateway products for different protocols such as BACnet, Modbus, and LonWorks. In addition, LG gateways include Stand-alone central control capability to act as a back-up controller of the BMS if needed.



Interlocking Solution by Using ACU Module

It is costly to introduce a BMS system to control multiple devices or systems in a small building. With the ACU module, various IO contact points (DI, DO, UI, AO) can be interlocked and integrated, while control is possible from the LG central controller. This enables an efficient management of lighting, pumps and other devices in the building in conjunction with the HVAC system.



Interlocking Solution Using Dry Contact

3rd party thermostats can be used to control LG air conditioners in a room by using a multi point dry contact. The dry contact enables basic control of air conditioners as well as making it possible to report the status and any errors impacting the indoor unit.

The Standard III remote control has a DO port. With this DO port, it is possible to interlock the indoor unit with 3rd party devices such as lighting, a fan, or a radiator, based on things like operation mode or current temperature.

The indoor unit can be interlocked with various types of input such as card key-tag, door sensor, human detection sensor etc. so that the air conditioner is automatically operated. In addition, the dry contact option settings enable operation of air conditioner to maintain proper temperature when the occupant is absent. This solution makes sure that the room does not overheat or become too cold when unoccupied so that energy cost can be saved.



OUTDOOR UNITS LINE-UP

Features	Appearance	4	5	6	8	10	12	14	16	18	20
MULTI V™ 5 Heat recovery • Dual sensing control • Large capacity ODU (Up to 20RT) • Continuous Heating • Ocean black fin heat exchanger • Energy saving by heat recovery technology • Flexible installation with heat recovery unit and large capacity • For large space, high rise building and individual control building				● ○							
					● ○	● ○	● ○	● ○	● ○	● ○	● ○
	  										
	 										
MULTI V™ 5 Cooling Only • Dual sensing control • Large capacity ODU (Up to 22RT) • Ocean black fin heat exchanger • For large space, high rise building and individual control building					● ○	● ○					
							● ○	● ○	● ○	● ○	● ○
	  										
	 										
	 										

Unit : RT

● 460V ● 380V ○ 220V

22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80		96
● ○	● ○	● ○	● ○	● ○	● ○	● ○																									
							● ○	● ○	● ○	● ○																					
● ○																															
	● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○																						
										● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○												
																				● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○	● ○		

OUTDOOR UNITS LINE-UP

Features	Appearance	4	5	6	8	10	12	14	16	18	20
MULTI V™ 5 Heat Recovery • Dual sensing control • Large capacity ODU (Up to 26HP) • Continuous Heating • Ocean black fin heat exchanger • Energy saving by heat recovery technology • Flexible installation with heat recovery unit and large capacity • For large space, high rise building and individual control building					 	 	 				
								 	 	 	 
	  										
	 										
	 										
MULTI V™ 5 Heat Pump • Dual sensing control • Large capacity ODU (Up to 26HP) • Continuous Heating • Ocean black fin heat exchanger • Energy saving by heat recovery technology • Flexible installation with heat recovery unit and large capacity • For large space, high rise building and individual control building					 	 					
								 	 	 	 
	  										
	 										
	 										
MULTI V™ 5 Pro • Dual sensing control • Large capacity ODU (Up to 26HP) • Continuous Heating • Ocean black fin heat exchanger • Flexible installation with heat recovery unit and large capacity • For large space, high rise building and individual control building				 	 	 	 				
								 	 	 	
	  										
	 										
	 										

Unit : HP

 460V

 380V

 220V

22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76		96		104	
 	 	 																														
 	 	 	 	 	 	 	 	 	 	 	 	 	 																			
														 	 	 	 	 	 	 	 	 	 									
																									 	 	 	 				
 	 	 																														
 	 	 	 	 	 	 	 	 	 	 	 	 	 																			
														 	 	 	 	 	 	 	 	 	 	 								
																									 	 	 	 				
 	 	 																														
			 	 	 	 	 	 	 	 	 	 	 																			
																 	 	 	 	 	 	 	 	 	 							
																													 	 		

OUTDOOR UNITS LINE-UP

[illegible]

Unit : HP

● 460V ● 380V ○ 220V

Time Slot	460V Load (HP)	380V Load (HP)	220V Load (HP)
22	1		
24	1		
26			
28	1		
30	1		
32			
34	1		
36			
38			
40	1		
42			
44			
46			
48			
50			
52			
54			
56			
58			
60	1		
62	1		
64	1		
66	1		
68			
70			
72			
74			
76			
78			
80			
82			
84			
86			
88			
90			
92			
94			
96			

INDOOR UNITS LINE-UP

kW			1.5	2.2	2.8	3.6	4.5	5.6	6.2	7.1	8.2	9.0	10.6	12.3	14.1	15.8	22.4	28.0
Type		Btu/h	5k	7k	9k	12k	15k	18k	21k	24k	28k	30k	36k	42k	48k	54k	76k	96k
4 th generation Wall Mounted	Artcool Gallery 			●	●	●												
	Artcool Mirror 		●	●	●	●	●	●		●								
	Standard 		●	●	●	●	●	●		●		●	●					
4 th generation Ceiling Mounted Cassette	4 Way Cassette (570 x 570) 		●	●	●	●	●	●	●									
	4 Way Cassette (840 x 840) 									●	●	●	●	●	●	●		
	Dual Vane 4 Way Cassette NEW (840 x 840) 									●	●	●	●	●	●			
	Round Ceiling Cassette NEW 									●			●		●			
	2 Way Cassette 				●	●		●		●								
	1 Way Cassette 			●	●	●		●		●								
4 th generation Ceiling Concealed Duct	High Static 			●	●	●	●	●		●	●		●	●	●	●	●	●
	Low Statics 		●	●	●	●	●	●	●	●								
4 th generation Fresh Air Intake																	●	●
Vertical AHU					●		●		●			●	●	●	●	●		
4 th generation Ceiling & Floor Convertible				●	●													
4 th generation Ceiling Suspended								●		●			●		●			
4 th generation Console				●	●	●	●											
4 th generation Floor Standing	Floor Standing with Case 			●	●	●	●	●		●								
	Floor Standing without Case 			●	●	●	●	●		●								
4 th generation HYDRO KIT	Low Temperature 													●				●
	High Temperature 													●			●	
4 th generation Energy Recovery Ventilator with DX Coil	with Humidifier 						●			●		●						
	without Humidifier 						●			●		●						

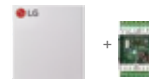
※ If 4th generation indoor units are connected to MULTI V WATER S, several functions are not available.
 ※ If 4th generation indoor units are combined to 2nd generation indoor units, several functions are not available.
 More detailed information, refer to the "MULTI V Indoor units Compatibility Table"

INDOOR UNITS FEATURE OVERVIEW

Energy Monitoring	2 Set Point	Occupied / Unoccupied Scheduling Function	Group Control	Test Run (Cooling)	Test Run (Heating)	Model Information Monitoring	Auto Addressing	Refrigerant Leakage Detection	Thermo On / Off Range Setting (Cooling)	Thermo On / Off Range Setting (Heating)	Static Pressure 11 Step Control (Only for Ceiling Concealed Duct type)	1 Point External Input (On / Off Control)	Filter Sign (Remaining Time)	Auto Restart Function Disable / Enable	Wi-Fi Ready
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●		●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●			●	●	●	●	●	●	●	●		●		●	●
●			●	●	●	●	●	●		●		●		●	●
			●	●	●		●	●				●	●	●	
			●	●	●		●	●				●	●	●	

LG HVAC CONTROL LINE-UP

INDIVIDUAL CONTROL			CENTRALIZED CONTROL		
Wired Remote Controller		Wireless Remote Controller	Display	Platform	Gateway
Standard	Simple				
Standard I (White)		NEW  PWLSSB21H (H/P)	AC Ez	ACP 5	ACP LonWorks
 PREMTB100	 PQRCVCL0QW		 PQCSZ250S0 (Indoor Unit ~32)	 PACP5A000 (Indoor Unit ~256) BACnet IP / Modbus TCP	 PLNWKB000 (Indoor Unit ~64)
		Wi-Fi Controller			
		LG Wi-Fi Modem	AC Ez Touch	AC Manager 5	Modbus RTU Gateway
Standard III (Black)		 For Indoor Unit PWFMD200	 PACEZA000 (Indoor Unit ~64)	 PACM5A000 (Indoor Unit ~8,192)	 PMBUSB00A
 PREMTBB10	 PQRCVCL0Q				
Standard II (White)			AC Smart 5		PI-485
 PREMTB001	 PQRCHCA0QW (Simple for Hotel)		 PACS5A000 (Indoor Unit ~128) BACnet IP / Modbus TCP		 For Indoor Unit (ERV) PHNFP14A0
Standard II (Black)					
 PREMTBB01	 PQRCHCA0Q (Simple for Hotel)				
Premium					
 PREMTA000 PREMTA000A PREMTA000B					

CENTRALIZED CONTROL	INTEGRATION DEVICE			
Facility Integrator	Indoor Unit		Outdoor Unit	AHU Kit
	Dry Contact	Control Accessory		
PDI (Power Distribution Indicator)	 Simple Dry Contact PDRYCB000	Group Control Wire	IO Module (Input / Output Module)	Communication Kit
 Premium (8 port) PQNUD1S40 Standard (2 port) PPWRDB000		 PZCWRCG3	 For MULTI V 5 PVD5MN000	 Return / Room Air control PAHCMR000
ACS IO Module (Input / Output Module)	 Dry Contact for Thermostat PDRYCB300	Remote Temperature Sensor	Variable Water Flow Control kit	
 PEXPMB000		 PQRSTA0	 For MULTI V WATER IV PWFCN000	 Discharge / Supply Air control PAHCM5000
Chiller Option Kit	 Dry contact for Thermostat (For using universal input) NEW PDRYCB320	Low Profile Remote Temperature Button Sensor	Low Ambient Kit	Controller Module
 PCHLLN000		 ZRTBS01	 For MULTI V IV, 5 PRVC2	 Main module NEW PAHCM000
ACU IO Module	 2 Points Dry Contact (For Setback) PDRYCB400	Zone Controller	Cool / Heat Selector	
 PEXPMB300		 4 Zones by thermostat ABZCA	 PRDSBM	 Communication module NEW PAHCMC000
UO	 For Modbus PDRYCB500		Water Communication Module	Control kit
 PEXPMB200			 NEW PAHCMW000	 NEW PAHCNM000 (Max 3 Outdoor Units)
UI	 PEXPMB100			EEV Kit (Electronic Expansion Valve)
				 PRLK048A0 (~ 28 kW) PRLK096A0 (~ 56 kW)
				 NEW PRLK396A0 (~ 112 kW)
				 NEW PRLK594A0 (~ 168kW)